~~Drift Reduction Technology (DRT)~~Hooded Sprayer Testing Requirement

Testing of ~~Drift Reduction Technology (DRT)~~hooded sprayers must be conducted in compliance with procedures as stated forth in [Appendix A].

[Registrant] must maintain a ~~Drift Reduction Technology (DRT)~~hooded sprayer tab on the website at [URL]. The website will identify a testing protocol, consistent with [Appendix A], that is appropriate for determining whether the ~~test~~ proposed ~~DRT~~ hooded sprayer reduces the spray drift of dicamba to a level equivalent to or less than (*i.e.*, not statistically greater than) that from the established baseline ~~DRT~~ hooded sprayer in [Appendix A]. ~~DRT~~ Hooded sprayers that have been tested pursuant to [Appendix A] by [registrant] and found, based upon such testing, to reduce the spray drift of dicamba to a level that is equivalent to or less than that from the established baseline ~~DRT~~ hooded sprayer identified in [Appendix A] will be added to the list of qualified ~~DRT~~ hooded sprayers on the website tab described above. Upon the Agency's request, test data relating to the impact of ~~DRT~~ hooded sprayers on drift properties of dicamba generated by [registrant] or somebody working for [registrant] with the intent of adding to the list of ~~approved~~ qualified ~~DRT~~ hooded sprayers on the website at [URL] must be submitted to EPA's Office of Pesticide Programs, along with certification indicating whether the study was performed ~~either~~ pursuant to the testing protocols identified on the website ~~or pursuant to other protocols approved by EPA~~ and whether the results of the testing support adding the tested ~~DRT~~ hooded sprayer to the list of products tested and found to reduce the spray drift of dicamba to a level that is equivalent to or less than that from the established baseline ~~DRT~~ hooded sprayer identified in Appendix A.

Additionally, the website must state that any ~~other~~ third-party entity seeking to have a ~~DRT~~ hooded sprayer added to the list of qualified hooded sprayers must contact [registrant] prior to any testing for this purpose. At the discretion of [registrant], [registrant] will either perform a study pursuant to the testing protocol herein or request the third-party to perform such study. Should [registrant] decline to perform testing, the third-party entity or a testing facility on their behalf must perform a study ~~either~~ pursuant to the testing protocol identified on the website ~~or another protocol that has been approved for this particular purpose by EPA~~ and must submit to ~~EPA~~ [registrant] the test data and results, along with ~~a~~ certification that the studies were performed ~~either~~ pursuant to the testing protocol identified on the website ~~or pursuant to another protocol(s) approved by EPA~~ and that the results of the testing support adding the ~~DRT~~ hooded sprayer to the list of ~~approved~~ qualified ~~DRT~~ hooded sprayers for dicamba. [Registrant] will certify that the testing and results conform to the conditions prescribed in this protocol and, pursuant to the test conditions and results, will either post the hooded sprayer on the website at [URL] or notify the third-party entity that the hooded sprayer did not meet the requirements for posting. Where the third-party entity disagrees with this decision, the protocol used and the test results will be sent to EPA for a final decision. [Registrant] will maintain records related to this third-party testing of hooded sprayers and will supply these records to EPA upon their request. ~~EPA will notify [registrant] when the Agency determines that a DRT sprayer has been certified to be appropriately added to the list, and [registrant] will add appropriately certified DRT sprayers to the list no more than 90 days after you receive such notice from EPA.~~

~~Some dicamba application requirements when using approved DRT may differ from those when not using approved DRT (*i.e.*, when using broadcast open-boom equipment), such as downwind~~

~~buffer distances.~~ Based on an assessment of additional data, EPA may approve additional application requirements specific to ~~DRT~~ hooded sprayer use, including for wind speed, nozzles, a particular crop use, or application timing. Refer to the label for application requirements.

Dicamba application requirements when using ~~approved~~ qualified ~~DRT~~hooded sprayers, the listing of ~~approved~~ qualified ~~DRT~~ hooded sprayers on the [URL] website, and the identification of the website address shall be included in educational and information materials developed by or for [registrant], including the materials identified in [Appendix D, Section B(l)].

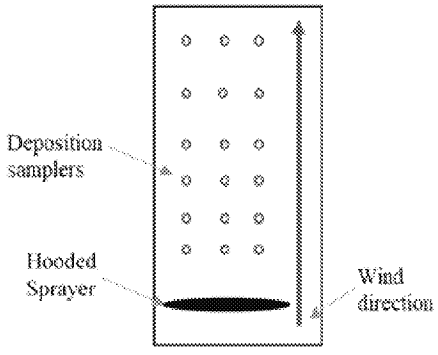
[Appendix A]

Testing of ~~Drift Reduction Technology (DRT)~~Hooded Sprayers for Impact on Spray Drift

Application equipment, such as hooded or shielded sprayers, proposed ~~as DRT~~ for in-crop (over-the-top) dicamba applications may be added to the list of ~~approved~~ qualified ~~DRT~~ hooded sprayers on [URL] website if found, based upon such testing, that it reduces the spray drift of dicamba to a level that is equivalent to or less than that from the established baseline ~~DRT~~ hooded sprayer as defined below.

Testing Conditions

Ambient Breeze Tunnel (ABT) controlled environment wind tunnel test using the conditions outlined below, with guidance from US EPA (2016)*. A section of a ~~DRT~~ hooded sprayer is placed in the tunnel with the boom length perpendicular to the wind direction. Absorbent pads line the floor of the ABT to prevent droplet bounce. Dicamba deposition samples are collected at pre-determined distances downwind from the sprayer. After a 2-minute clear-out period, samples are retrieved from the farthest to the closest distances relative to the sprayer for subsequent residue analysis to quantify dicamba deposition. Testing conditions are established herein with the express purpose of producing and comparing drift deposition curves between a baseline and a proposed hooded sprayer and are therefore not intended to be representative of field conditions.



Testing is not required to be performed to GLP standards but is expected to be well-documented and validated, with associated record retention for potential future reference.

Spray components:	Clarity® + Induce (0.5 lb a.e./A + 0.25% v/v)
Baseline ~~DRT~~ hooded sprayer:	RedBall® 642E
~~Test~~ Proposed ~~DRT~~ hooded sprayer:	----------TBD
Boom Configuration:	Fixed; length perpendicular to wind direction; rear curtain of hood/shield 6-in above ground
Nozzle/pressure:	TT 11003 at 50 psi
Spray rate:	15 GPA

Commented [SC1]: The recommended inclusion of a simulated crop material into the protocol introduces a level of variability that would be difficult to control (e.g., monocot/dicot/artificial) and to standardize across different tunnels. Further, it adds complexity in the analysis and interpretation of the results for qualifying a hooded sprayer. Also, this bare ground test condition is consistent with the 2016 EPA Generic DRT Protocol ("For field testing…There should be a bare ground (or stubble less than 7.5 cm high) treatment area and a similarly bare downwind area for sampling stations." p. 8)

* United States Environmental Protection Agency. 2016. Generic Verification Protocol for Testing Pesticide Application Spray Drift Reduction Technologies for Row and Field Crops

Wind speed:	Minimum 10 mph
Temperature:	Ambient
Humidity:	Ambient
Deposition samplers:	Filter paper ~~or petri dish~~ on blocks 3-in above ground
Number of samplers:	Minimum 3 at each downwind distance
Sampler distances:	Minimum 6 downwind distances for analysis purposes; actual distances may vary based on study-specific considerations.
Drift simulations:	Minimum 13 per ~~DRT~~ hooded sprayer
Analysis:	Appropriate non-linear and/or generalized linear models will be fit to the drift deposition measurements for each drift simulation of each ~~DRT~~ hooded sprayer evaluated. After an appropriate model is selected, deposition estimates will be made at 2, 4, 8, 15, 30, 60, and 120 feet for both the baseline and proposed hooded sprayer. ~~area under the curve (AUC) will be quantified to statistically compare relative total deposition between DRT sprayers. This comparison will be made by a one-tailed t-test (assuming equal variances; upper-bound; $\alpha = 0.10$) of mean AUC values between the baseline DRT sprayer and test DRT sprayer mean deposition.~~
Passing result:	If a comparison of the deposition values for the proposed hooded sprayer to the baseline hooded sprayer at 30 feet, using a one-tailed t-test (assuming equal variances, upper bound, alpha=0.10), ~~the relative total deposition as quantified by area under the curve for the test DRT sprayer~~ is not statistically ~~greater than that for the baseline DRT sprayer~~different, then the ~~test~~ proposed ~~DRT~~ hooded sprayer functions equivalent to or better than the baseline ~~DRT~~ hooded sprayer. ~~and can be added to the approved DRT list for dicamba applications.~~

Commented [SC2]: With the fixed boom configuration, the multiple deposition samplers downwind provide the replication for the study.

Commented [SC3]: Conducting a t-test at every deposition estimate adds complexity and uncertainty for being able to qualify a hooded sprayer.